Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Please cancel claim 33 without prejudice and amend claims 1, 4-32, and 34-36 as follows:

1. (currently amended): A receiver for use in a communications system that employs digitally modulated signals operating in a communications band of frequencies that is divided into two or more non-overlapping channels comprising:

an input for receiving a data stream representative of the communications band, with each channel within the communications band having been converted to baseband and sampled at a rate of at least twice the symbol rate of the ~~related~~ corresponding channel;

an equalizer configured to equalize the data for each of the two or more non-overlapping channels;

a timing recovery circuit configured to recover timing information for each of the two or more overlapping channels;

a phase recovery circuit configured to recover phase information for each of the two or more overlapping channels; and

an indexer that controls the cycling of data through the equalizer, the timing recovery, and phase recovery circuits so that data related to each channel is processed by each of the equalizer, the timing recovery, and phase recovery circuits in sequence, thereby requiring only one phase

recovery, one timing recovery and one equalization circuit for all the channels within the communications band.

2. (previously presented): The receiver of claim 1 further comprising:

data memory configured to store data in data memory locations for each of the two or more non-overlapping channels separately.

3. (original): The receiver of claim 2 wherein the data memory is configured as a circular buffer.

4. (currently amended): The receiver of claim 3 wherein the data memory is configured as a two-way circular buffer, with data extracted from the buffer in one ~~loop~~ cycle at a ~~rat~~ clock rate [["]]CLK[["]] and data written to ~~channel-related divisions~~ channel allocated locations of the buffer at rates that total the clock rate CLK at which data is extracted from the buffer.

5. (currently amended): The receiver of claim 4 wherein the rate at which data is written to each ~~channel-related division~~ channel allocated location of the buffer is equal to the rate at which data is extracted from the buffer multiplied by a ratio of storage area devoted to the corresponding channel compared to the total storage area of the data memory dedicated to storing ~~channel~~ data.

6. (currently amended): The receiver of claim 2 wherein the indexer comprises an index vector that provides an indication of which channel is related to the data in each of the data memory locations dedicated to storing ~~channel~~ data.

7. (currently amended): The receiver of claim 4 wherein the clock rate CLK is equal to the total sampled data rate of the communications band.

8. (currently amended): The receiver of claim 1 further comprising:

a receiver front end, the front end comprising;

a down-converter configured to accept a sampled data stream comprising samples of the communications band sampled at a rate of at least twice the frequency of the highest frequency in the communications band and to convert the two or more non-overlapping channel signals within the communications band to baseband; and

a decimator configured to decimate a down-converted signal received from the down converter to produce the data stream representative of the communications band.

9. (currently amended): The receiver ~~front end~~ of claim 8 wherein the receiver front end further ~~comprising~~ comprises a plurality of down-converters configured to down convert to baseband channel signals the two or more non-overlapping channel signals within the communications band in parallel.

10. (currently amended): The receiver ~~front end~~ of claim 9 wherein the receiver front end further ~~comprising~~ comprises a ~~decimator~~ plurality of decimators each configured to receive a corresponding one of the baseband channel signals from a corresponding one of the down-converters and to decimate ~~a~~ the corresponding baseband channel signal to a digital data stream having two samples for each symbol period of the respective channel.

11. (currently amended): The receiver ~~front end~~ of claim 10 wherein the receiver front end is configured to down-convert and decimate a data over cable service interface specification (DOCSIS) data stream comprising digitally modulated signals that fall within non-overlapping upstream channels that are assigned within a 5 to 42 MHz band.

12. (currently amended): The receiver ~~front end~~ of claim 10 wherein the receiver front end is configured to down-convert and decimate a data stream in which non-overlapping channels are assigned bandwidths of approximately 3.2MHz, 1.6 MHz, .6 MHz, .4 MHz, or .2 MHz.

13. (currently amended): The receiver ~~front end~~ of claim 8 wherein the receiver front end further ~~comprising~~ comprises a plurality of down-converters arranged in a tree-structure to iteratively convert to baseband successively smaller portions of the communications band.

14. (currently amended): The receiver ~~front end~~ of claim 13 wherein the down-converters are configured to iteratively convert to baseband smaller portions of the communications band until each channel within the band is converted to baseband.

15. (currently amended): The receiver ~~front end~~ of claim 13 wherein the receiver front end further ~~comprising~~ comprises a plurality of decimators configured to decimate the successively smaller portions of the communications band.

16. (currently amended): The receiver ~~front end~~ of claim 15 wherein the decimators are configured to decimate each baseband channel to a sample rate that is twice the symbol rate of the baseband channel.

17. (currently amended): The receiver ~~front end of claim 8 further~~ of claim 8 wherein the receiver front end ~~comprising~~ comprises an analog to digital converter (ADC) configured to receive the data stream, to sample the communications band at greater than twice the highest frequency of the communications band and to provide the sampled data to the down-converter.

18. (currently amended): A method for receiving signals in a communications system that employs digitally modulated signals operating in a communications band of frequencies that is divided into two or more non-overlapping channels comprising the steps of:

(A) receiving at an input a data stream representative of the communications band, with each channel within the communications band converted to baseband and sampled at a rate of at least twice the symbol rate of the ~~related~~ corresponding channel;

(B) equalizing the data for each of the two or more non-overlapping channels in an equalizer circuit;

(C) recovering timing information for each of the two or more non-overlapping channels in a timing recovery circuit;

(D) recovering phase information for each of the two or more non-overlapping channels in a phase recovery circuit; and

(E) indexing the cycling of data through the equalizer, the timing recovery, and phase recovery circuits so that data ~~related~~ corresponding to each channel is processed by each of the equalizer, the timing recovery, and phase recovery circuits in sequence, thereby requiring only one phase recovery, one timing recovery and one equalization circuit for all the channels within the communications band.

19. (currently amended): The method of claim 18 further comprising the step of:

(F) storing data in data memory locations for each of the two or more non-overlapping channels in separate areas of a data memory.

20. (currently amended): The method of claim 19 ~~comprising the step of:~~ wherein

~~(FI) storing the data in data memory~~ said data memory is configured as a circular buffer.

21. (currently amended): The method of claim 20 ~~comprising the step of:~~ wherein

~~(F2) storing the data in data memory~~ said data memory is configured as a two-way circular buffer whereby with data extracted from the buffer in one ~~loop~~ cycle at a clock rate [["]]CLK[[']] and data is written to ~~channel-related divisions~~ channel allocated locations of the buffer at rates that total the clock rate CLK at which data is extracted from the buffer.

22. (currently amended): The method of claim 21 wherein the rate at which data is written to each ~~channel-related division~~ channel allocated location of the buffer is equal to the rate at which data is extracted from the buffer multiplied by a ratio of storage area devoted to the corresponding channel compared to the total storage area of the data memory dedicated to storing channel data.

23. (currently amended): The method of claim 19 further comprising the step of:

~~(El)~~ ~~the indexer~~ providing an indication by an indexer of which channel is related to data in each of the data memory locations dedicated to storing ~~channel~~ data.

24. (currently amended): The method of claim 21 wherein the clock rate CLK at which data is extracted from the data memory is equal to the total sampled data rate of the communications band.

25. (currently amended): The method of claim 18 further comprising the step of:

~~(G)~~ down-converting and decimating ~~digitally modulated signals~~ a sampled data stream operating in the communications band that is divided into two or more non-overlapping channels, with each channel occupying no more than a predetermined maximum frequency band.

26. (currently amended): The method of claim 25 wherein step ~~(G)~~ of down-converting and decimating further comprises the steps of;

~~(G1) a down-converter~~ accepting ~~a~~ the sampled data stream containing two or more non-overlapping channel signals in a down-converter, the two or more non-overlapping channel signals comprising samples of the communications band sampled at a rate of at least twice the frequency of the highest frequency in the communications band;

~~(G2) the~~ down- ~~converter~~ converting the two or more non-overlapping channel signals within the communications band to baseband as a down-converted signal; and

~~(G3) a decimator~~ decimating the down-converted signal received from the down-converter.

27. (currently amended): The method of claim 26 wherein the step ~~(G2)~~ of down-converting further comprises the ~~step~~ steps of:

receiving in a plurality of down-converters the sampled data stream; and

~~(G2a) a plurality of down-converters~~ down-converting to baseband the two or more non-overlapping channel signals within the communications band in parallel in the plurality of down-converters.

28. (currently amended): The method of claim 27 wherein the step ~~(G3)~~ of decimating further comprising the ~~step~~ steps of:

~~(G3a) a plurality of decimators with a decimator~~ receiving in a plurality of decimators the baseband channel signals from a corresponding one of the down-converters; and

decimating in parallel in the plurality of decimators, each decimator decimating a corresponding baseband channel signal to ~~a~~ the ~~digital~~ data stream having two samples for each symbol period of the respective channel.

29. (currently amended): The method of claim ~~26~~ 25 wherein the ~~down-converter and decimator down-convert and decimate~~ sampled data stream is a data over cable service interface specification (DOCSIS) ~~compatible signals~~ data stream.

30. (currently amended): The method of claim 29 wherein the ~~down-converter and decimator down-convert and decimate a~~ DOCSIS data stream ~~comprising~~ comprises digitally modulated signals that fall within non-overlapping upstream channels that are assigned within a 5 to 42 MHz band.

31. (currently amended): The method of claim 30 wherein the ~~down-converter and decimator down-convert and decimate a data stream in which~~ non-overlapping upstream channels are assigned bandwidths of approximately 3.2MHz, 1.6 MHz, .8 MHz, .4 MHz, or .2 MHz.

32. (currently amended): The method of claim 26 wherein the step ~~(G2)~~ of down-converting further comprises the ~~step~~ steps of:

receiving in a plurality of down-converters arranged in a tree structure the sampled data stream; and

~~(G2b) a plurality of down-converters arranged in a tree-structure~~ iteratively converting to baseband successively smaller portions of the communications band in the plurality of down-converters arranged in a tree-structure.

33. (canceled)

34. (currently amended): The method of claim 26 ~~further comprising~~ wherein the step of[[:]]

~~(G3b) decimators~~ decimating is accomplished in decimators on successively smaller portions of the communications band comprising two or more baseband channels.

35. (currently amended): The method of claim 34 ~~further comprising~~ wherein the step of[[:]]

~~(G3c) the decimators~~ decimating is accomplished in the decimators on each of the baseband ~~channel~~ channels to a sample rate that is twice the symbol rate of the corresponding baseband channel.

36. (currently amended): The method of claim ~~28~~ 25 further comprising the steps of:

~~(H) one or more analog to digital converters (ADC)~~ receiving ~~the~~ a digitally modulated data stream in one or more analog to digital converters (ADCs), the number of ADCs being fewer than the number of channels in the communications band; and

~~(I) the ADCs~~ sampling in the one or more ADCs the entire band at greater than twice highest frequency of the communications band to produce the sampled data stream.[[;]] ~~and~~

~~(J) the one or more ADCs providing the sampled data to the down-converters and decimators.~~